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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,724	11/28/2001	Shinichi Sato	35.C15977	8317

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EXAMINER

NGHIEM, MICHAEL P

ART UNIT	PAPER NUMBER
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2863

DATE MAILED: 01/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,724

Applicant(s)

SATO ET AL.

Examiner

Michael P Nghiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-18 and 25-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-18 and 25-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6-3-03
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

The Amendment filed on September 23, 2002 has been acknowledged.

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

Correction of the following is required:

Claim 18, "... a suction pump to reduce pressure ... through the air outlet" is not supported by the specification. Fig. 12 shows pump (B304) reducing pressure through suction port (B123) and not through air outlet (B410).

Claim Objections

2. Claims 6 and 25 are objected to because of the following informalities:
"Ink" should be – ink --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-7, 9-18, and 25-31 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 25, 26, and 31, it is not understood how the air outlet can be used for making the ink container under negative pressure.

The remaining claims are also rejected under 35 U.S.C. 112, first paragraph, for being dependent upon a rejected base claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 26-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Hirano et al. (US 6,540,321).

Regarding claims 26 and 31, Hirano et al. discloses a first ink tank (20) for an ink-jet printing apparatus (Fig. 2), the first ink tank (20) comprising:

- an ink container (ink container of 20) containing an ink;
- an ink inlet (20b) for introducing an ink to the ink container (Fig. 12);
- an air outlet (53) for making the ink container under negative pressure in cooperation with the ink-jet printing apparatus (Figs. 14-16), an ink being introduced to the ink container through the ink inlet when negative pressure is applied to the ink container (Figs. 14-16);
- gas-liquid separation means (48) which does not pass liquid but gas at the air outlet (Fig. 12);
- wherein an inner surface of the ink container has been subjected to a surface processing (column 40, lines 37-39).

Regarding claim 26, Hirano et al. further discloses a process (Figs. 12-17) for introducing an ink to the first ink tank (20), the process comprising the steps of:

- connecting a second ink tank (22) containing an ink to be introduced into the ink container of the first ink to the ink inlet (Figs. 13-16);
- reducing pressure of the ink container of the first ink tank while the second

ink tank and the ink inlet are being connected (Figs. 14-16).

Regarding claim 27, Hirano et al. discloses that the gas-liquid separating means comprises a gas permeable membrane made of a porous material (column 11, line 67 – column 12, line 2).

Regarding claim 28, Hirano et al. discloses that the gas permeable membrane is a resin porous material (column 11, line 67 – column 12, line 2).

Regarding claim 29, Hirano et al. discloses that the resin porous material is a tetrafluoroethylene resin (column 12, line 2).

Regarding claim 30, Hirano et al. discloses a step of stopping ink supply to the ink container when an ink level in the ink container has reached to the gas-liquid separation means (Figs. 16, 17).

Regarding claim 31, Hirano et al. further discloses that the ink is free from disturbing gas permeability of the membrane (Fig. 15).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 9-16, 18, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al. in view of Koitabashi et al. (US 5,509,140).

Hirano et al. further discloses the following claimed limitations:

Regarding claim 6, Hirano et al. discloses an ink absorbing member (41a) capable of absorbing and holding the ink in the ink container (Fig. 12).

Regarding claim 9, Hirano et al. discloses that the surface processing is a water-repellent processing (column 40, lines 37-39).

Regarding claim 10, Hirano et al. discloses an ink outlet (42) for discharging the ink in the ink container to the outside.

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Regarding claims 11, 13, and 14, Hirano et al. discloses an ink-jet recording head (20a) capable of ejecting the ink is connected to the ink outlet (Fig. 12).

Regarding claim 15, Hirano et al. discloses:

- means (21a, 101) for connecting the second ink tank with the ink inlet of the first ink tank (Figs. 13-16);

- means (includes 31) for reducing a pressure in the ink container of the first ink tank through the air outlet of the first ink tank when the second ink tank is connected to the ink inlet of the first tank (Figs. 13-16).

Regarding claim 16, Hirano et al. discloses that the connection means comprises an ink supply path (21a) communicated to the second ink tank, and a joint (101) at an end of the ink supply path, the joint being connectable to the ink inlet of the first ink tank (Figs. 13-16).

Regarding claim 18, Hirano et al. discloses that the pressure reducing means comprises a suction pump (31) to reduce a pressure in the ink container through the air outlet (Figs. 13-16).

However, Hirano et al. does not disclose the following claimed features:

- regarding claim 1, the ink has surface tension of 28 mN/m or higher but not higher than 50 mN/m;

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- regarding claim 25, a content of the surfactant in ink is higher than 0.05 wt %.

Nevertheless, Koitabashi et al. discloses that the ink has surface tension of 28 mN/m or higher but not higher than 50 mN/m (column 35, lines 45-46) for the purpose of preventing ink meniscus breakage in the recording head orifice. Thus, ink leakage from the head orifice would be prevented. Koitabashi et al. further discloses that a content of the surfactant is higher than 0.05 wt % (column 39, lines 55-59) for the purpose of improving the image quality.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Hirano et al. with the surface tension and content of surfactant of ink as disclosed by Koitabashi et al. for the purposes of preventing ink leakage and improving print quality.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirano et al. in view of Koitabashi et al. as applied to claims 1-4, 6, 9-16, 18, and 25 above, and further in view of Lorenze et al. (US 5,663,754).

Hirano et al. further discloses that the gas-permeable member (48) may be made of a tetrafluoride ethylene resin or other porous resin materials (column 11, line 67 - column 12, line 2).

However, Hirano et al. as modified does not disclose that the porous material is selected from the group consisting of unglazed porcelain, earthenware and ceramics.

Nevertheless, Lorenze et al. discloses a porous material (58) being made of ceramics (Gortex, column 3, lines 50-52) for the purpose of permitting the passage of air but preventing liquid ink flow out of the cartridge.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Hirano et al. as modified with a porous material being made of ceramics as disclosed by Lorenze et al. for the purpose of permitting the passage of air but preventing liquid ink flow out of the cartridge.

Response to Arguments

6. Applicant's arguments filed on September 23, 2003 have been fully considered but they are not persuasive.

With respect to the objection to the specification regarding failing to provide proper antecedent basis for the claimed subject matter and the 35 USC 112 first paragraph rejection, Applicants argue that by virtue of the connection between suction port (B123) and air outlet (B410), it is possible for the suction pump (B304) to reduce pressure in subtank (B400) through air outlet (B410).

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Examiner's position is that Fig. 12 of the current invention shows that the suction pump (B304) can only suction **out** air and ink **through suction port (B123)** and not through air outlet (B410). This process may well affect the air inflow through air outlet (B410). However, the reduction of pressure in the subtank (B400) corresponds to the suction of air and ink **out** of the subtank (B400) **through suction port (B123)** by suction pump (B304). Thus, it is impossible for the suction pump (B304) to reduce pressure in subtank (B400) through air outlet (B410).

Applicant's arguments with respect to the prior art rejections have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

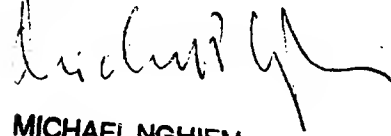
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (703) 306-3445. The examiner can normally be reached on M-H from 6:30AM – 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached at (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-5841 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-

0956.

A handwritten signature in black ink, appearing to read 'Michael Nghiem', with a stylized flourish at the end.

MICHAEL NGHIEM
PRIMARY EXAMINER
Michael Nghiem

January 8, 2004